



North Carolina Department of Transportation
Transportation Program Management Unit - Value Management
Innovative Technologies and Products Awareness Report
August 2, 2018

PRODUCT HIGHLIGHT – Centri-Cast Pipe Repair

Five Star Centri-Cast® Pipe Repair Mortar is a high-performance, fiber-reinforced repair mortar that provides a structural repair by creating a new, continuous, cementitious pipe within an existing pipe culvert. The Centri-Cast process will seal, rehabilitate, and protect the pipe from corrosion with little to no disturbance of the surrounding area. It is capable of repairing pipes with a diameter as little as 30 inches. To prepare the pipe for application, the interior must be cleared of debris and oxidation with high-pressure water blasting. Water flow must be diverted and standing water must be removed from the pipe. Then, the repair mortar is applied using centrifugal force by rapidly spinning the mortar spout in a circle applying a ¾ to 1 inch layer of mortar to the inside wall of the corrugated metal or reinforced concrete pipe. This is done across the entire length of the pipe. The pipe should be ready for use after allowing the mortar to set overnight.

The major advantage of the Centri-Cast Pipe Repair is that it provides a way of rehabilitating an existing pipe without having to remove and replace it. This is useful in areas with significant traffic, poor detour routes, dead-end roads, utility conflicts, and pipes at a significant depth. Division 10 has used this process at four locations to date. They have found that the process results in an increased flow capacity of the deteriorated pipe. However, there is minimal loss in flow compared to the original pipe due to the decreased diameter. This is being used in other projects in NC including Division 7, who has let a contract for bid using this process. The product is Approved and listed on the Approved Product List as NP13-6595.

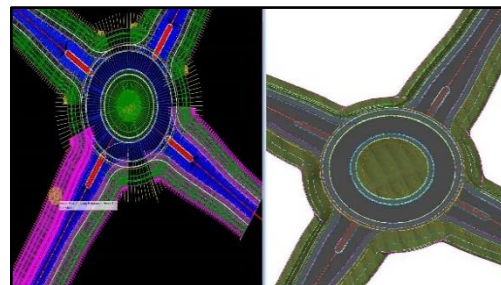


Centri-Cast Pipe Repair Mortar being applied.

More information can be found at <http://www.fivestarprouducts.com/centri-cast.html>.

PRODUCT INNOVATION – OpenRoads Designer Application

OpenRoads Designer (ORD) is a construction-driven design application created by Bentley Systems, Inc. that focuses on detailed design capabilities and expedited project delivery. The purpose of ORD is to provide a new kind of 3-D modeling environment that allows for easy access and coordination between different design units of an organization. As opposed to 2-D modeling, the 3-D modeling approach provides a more accurate design of the project that enables better design scenario visualization. This allows for visibility and analysis of different design outcomes such as drainage, grading, surveying, and subsurface utilities. This capability allows the designers to see where conflicts may arise between the existing terrain and the planned project. ORD can upload, analyze, and manipulate field data from sources such as photogrammetry and GPS LiDAR to make these 3-D models.



3-D Roundabout Design

Through the use of this technology, different units within DOT would be able to more efficiently coordinate to prevent conflicts and time wasted on unnecessary plan revisions. ORD was released through early-access on December 1, 2016 and is currently only being used by private engineering firms. However, many state DOTs, including NCDOT, are transitioning to using this new software. NCDOT is the frontrunners of state DOTs in migrating to the OpenRoads Designer system. For more information about OpenRoads Designer and Bentley Systems, Inc. visit: <https://www.bentley.com/en/products/product-line/civil-design-software/openroads-designer>.